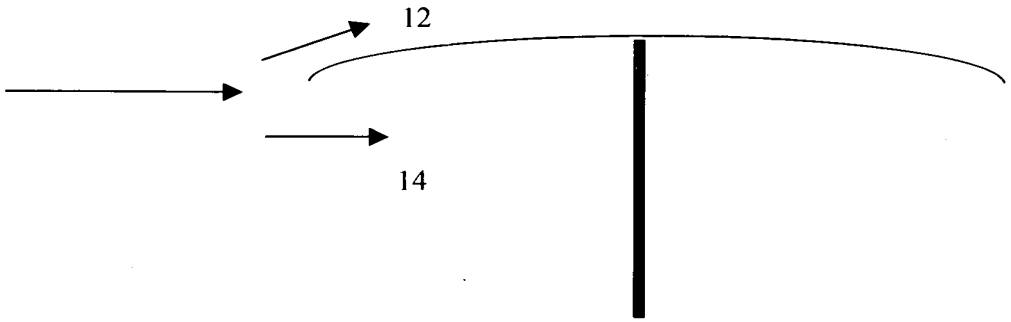
REMARKS

Examiner Verdier's willingness to hold a telephone conference with Applicant's attorney on February 9, 2001 is acknowledged with gratitude.

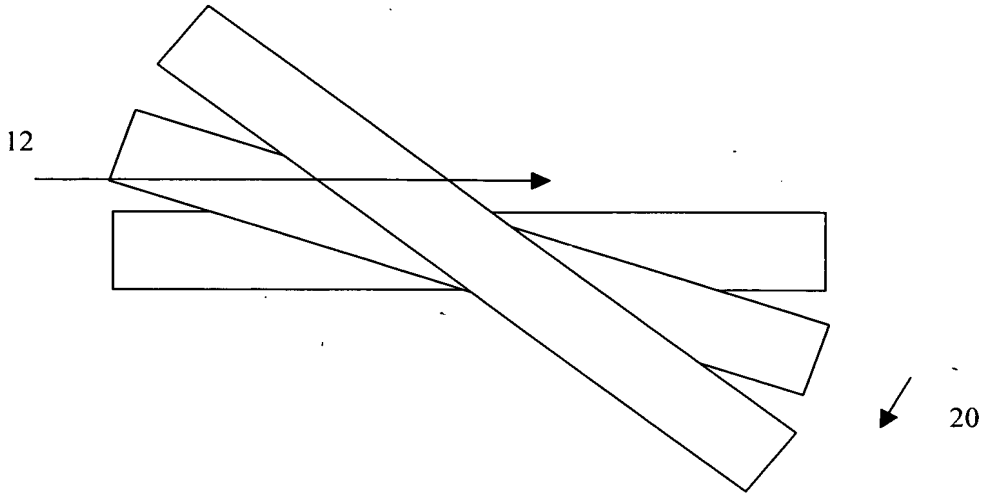
Applicant readily acknowledges Examiner Verdier's point that the movement of helicopter blades generate lift during forward flight. Certainly if they did not, the helicopter would fall to the ground. A problem is encountered, however, when rapid forward flight is attempted. The translational movement of the blades through the air interferes with the effect of the rotational movement of the blades. In particular, during the blades rearward sweep, they do not cut through the air, but rather travel at the same speed as the air passing by or actually have air pass over them in the same direction the blade is moving. In a traditional helicopter each blade is in the shape of an air foil and, accordingly the lifting properties of the blade set depend upon the blades cutting through the air in the direction of rotation as they rotate.

The helicopter blade assembly of the present invention operates in accordance with a different principle. As the outward most portion of the blade, which is cambered downwardly, passes through the air in the forward part of its sweep, the air that passes over the camber 12 is induced to travel faster than the air passing under the camber 14.



The faster moving air 12 will then pass over various parts of the blade assembly, pulling upwardly upon it (see diagram below showing successive blade positions, rotating in direction 20). Accordingly, in the present invention it is the shape swept out by the blades that has the properties of a lifting body, rather than the cross-section of each individual blade, as is the case in

a standard helicopter. Please see the attached exhibit of drawings, which illustrate this concept.



Claim 1 makes clear this distinction reciting, "a set of rotatable blades which sweep out the shape of a virtual disk having the properties of a lifting body when they are rapidly rotated by the mast, so that as the virtual disk is pushed translationally through the air it thereby generates lift."

Accordingly, novelty will be determined by whether or not any references show explicitly or inherently a set of blades that sweep out a virtual disk (i.e. surface of revolution) having the properties of a lifting body. It is Applicant's position that none of the blade sets shown in the cited references do. Certainly, none of the cited references explicitly mention such a virtual disk or otherwise discuss the characteristics of the surface of revolution of the blades. Moreover, applicant respectfully disagrees that the quality of forward flight negates the novelty of claim 1, as the cited references each show a helicopter that flies due to having a blade set in which each individual blade has the quality of a lifting body and generates lift due to its rotational velocity, rather than by sweeping out a lifting body that generates lift as it is translated.

Applicant encourages the PTO to show how it is that one of the cited references, or any reference, inherently shows a set of blades sweeping out the shape of a lifting body. Applicant notes that in order to do this the PTO should refer to and discuss the surface of revolution of the blade assembly, which the PTO has not done in this case. For example, in citing Wilford et

al., what shape is it that the blades sweeps out? And what about this shape gives it the characteristic of being a lifting body? Applicant respectfully suggests that the shape would be too sharply angular to be an effective lifting body.

Likewise with respect to Hartt and Wallace, a circular wing (68 in Hart and 22 in Wallace) appears to be shown, but this is not the same as a virtual disk swept out by the blades. Kingsbury is directed to a propeller, rather than a set of helicopter blades. Black and Kunz appear to show an actual disk rather than a virtual disk.

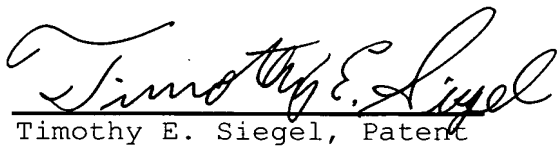
Benne shows a standard helicopter blade set except for that there is a mechanism for altering the pitch of the outer portion of the blade. This does not affect the camber of the virtual disk swept out by the blades, which is not a lifting body in any event.

With respect to claim 2, Kingsbury is directed to a propeller rather than a helicopter blade assembly. Moreover, lever 15 of Wilford is noted by the specification as changing the hub and axis of rotation, which is different from the camber. Benne is discussed above.

New claim 3 is supported by FIG. 1a-12b and the accompanying text. New claim 4 is supported by FIG. 13b and accompanying text. Applicant respectfully submits that none of the cited reference anticipate either of these two new claims.

It is respectfully submitted that the claims are now in a condition for allowability. Early notification of allowance is earnestly solicited.

Respectfully submitted,



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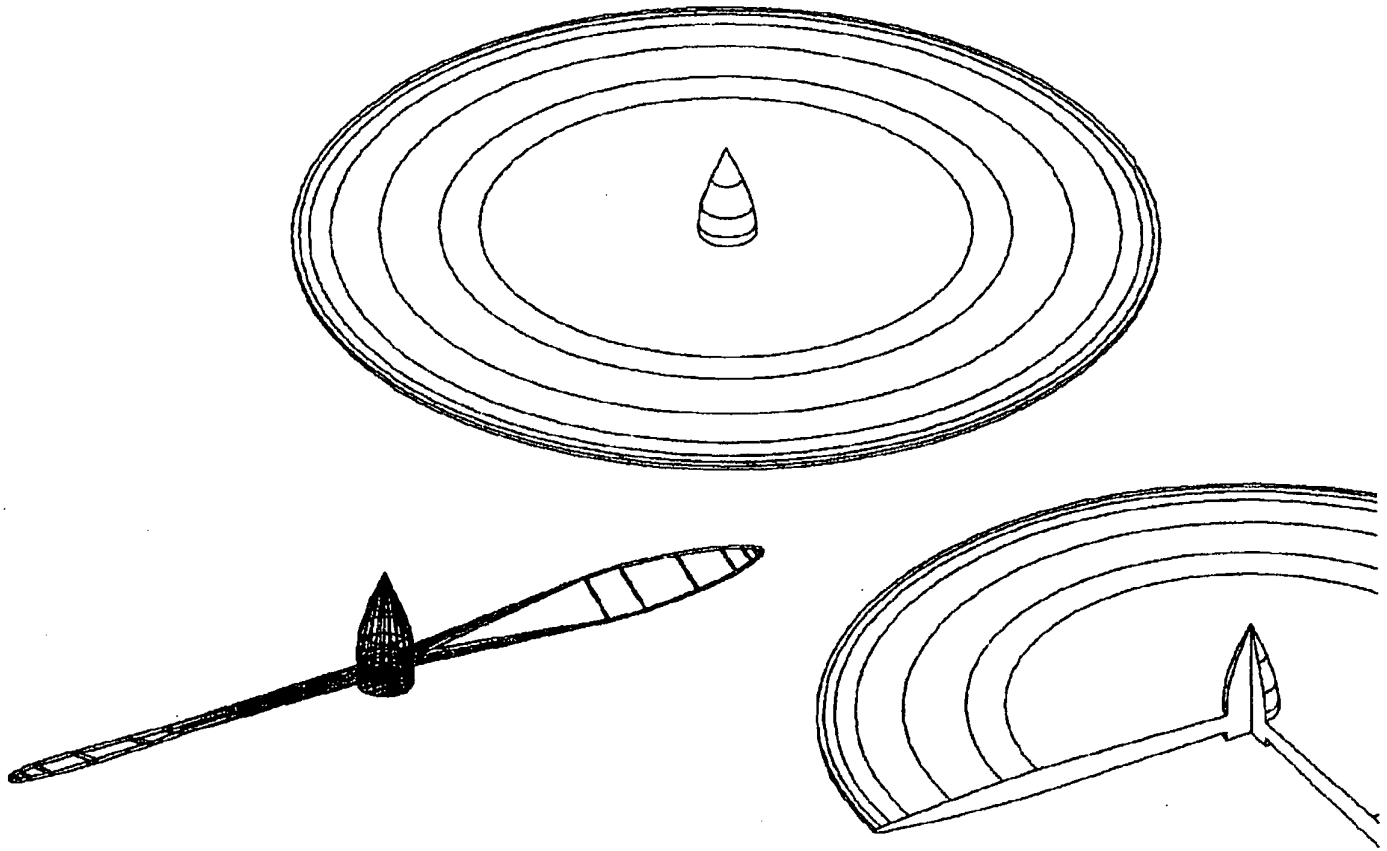
CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Box Non-Fee Amendment, Assistant Commissioner for Patents, Washington, D.C. 20231, on March 20, 2001

Mari Yamamoto



(1) Propellor; swept surface; surface cut-out.
DCM 3/16/01

(2)

Blades; swept surface; surface cut-out
Pcw 3/16/01